

5

10

SECOND AUXILIARY REQUEST

Claims

15

1. A refrigerant composition which comprises:

(i) pentafluoroethane, 1,1,1,2- or 1,1,2,2-tetrafluoroethane, 1,1-difluoroethane, trifluoromethoxy pentafluoroethane, 1,1,1,2,3,3-heptafluoropropane or 1,1,1,2,2,3,3-heptafluoropropane, or a mixture of two or more thereof, in an amount from 30 to 60% by weight based on the weight of the composition *n-butane*
 (ii) an unsubstituted hydrocarbon of the formula C_nH_m in which n is at least 4 and m is at least $2n-2$, other than methyl propane, in an amount from 1 to 4% by weight based on the weight of the composition.

with the remainder, not exceeding 60% by weight based on the weight of the composition, being:

25

(iii) pentafluoroethane, trifluoromethoxy difluoromethane or hexafluorocyclopropane, or a mixture of two or more thereof.

2. A composition according to claim 1 wherein component (i) is present in an amount of 50% by weight based on the weight of the composition.

3. A composition according to claim 1 or 2 wherein component (i) is 1,1,1,2-tetrafluoroethane or a mixture of said ethane with pentafluoroethane.

35 4. A refrigerant composition which comprises:

(i) pentafluoroethane, 1,1,1,2- or 1,1,2,2-tetrafluoroethane, 1,1-difluoroethane, trifluoromethoxy pentafluoroethane, 1,1,1,2,3,3-heptafluoropropane or 1,1,1,2,2,3,3-heptafluoropropane, or a mixture of two or more thereof, in an amount from 50 to 75% by weight based on the weight of the composition *n-butane*
 (ii) an unsubstituted hydrocarbon of the formula C_nH_m in which n is at least 4 and m is at least $2n-2$, other than methyl propane, in an amount from 1 to 4% by weight based on the weight of the composition; with the remainder being
 (iii) pentafluoroethane, trifluoromethoxy difluoromethane or hexafluorocyclopropane, or a mixture of two or more thereof.

45 5. A composition according to claim 4 wherein component (i) is 1,1,1,2-tetrafluoroethane or a mixture of said ethane with pentafluoroethane.

6. A composition according to claim 4 or 5 wherein component (iii) is pentafluoroethane.

50 7. A refrigerant composition which comprises:

(i) 1,1,1,2- or 1,1,2,2-tetrafluoroethane, or a mixture of pentafluoroethane and 1,1,1,2- or 1,1,2,2-tetrafluoroethane, in an amount from 30 to 94% by weight based on the weight of the composition,
 (ii) an unsubstituted hydrocarbon of the formula C_nH_m in which n is at least 4 and m is at least $2n-2$, other than methyl propane, in an amount from 1 to 4% by weight based on the weight of the composition,
 (iii) pentafluoroethane in an amount from 5 to 60% by weight based on the weight of the composition with the proviso that the concentration of pentafluoroethane in the composition is not 5 to 20% by weight based on

~~the weight of the composition.~~

4. A composition according to any one of the preceding claims wherein component (ii) is present in an amount from 2 to 4% by weight based on the weight of the composition.

5. A composition according to claim 4 wherein component (ii) is present in an amount from 3 to 4% by weight based on the weight of the composition.

10. A composition according to any one of the preceding claims wherein component (ii) is a mixture of said hydrocarbons.

11. A composition according to any one of the preceding claims wherein component (ii) comprises a hydrocarbon which possesses 4 or 5 carbon atoms.

15. 12. A composition according to claim 11 wherein component (ii) comprises a hydrocarbon which is n-butane.

6. 13. A composition according to claim 12 which comprises:

20. (a) 46 to 46.5% by weight of pentafluoroethane
 (b) 50 % by weight of 1,1,1,2-tetrafluoroethane and
 (c) 4 to 3.5% by weight, respectively, of n-butane.

7. 14. Use as a refrigerant of a composition as claimed in any one of claims 1 to 18.

25. 8. 15. Use according to claim 7 in a refrigeration or airconditioning system designed to use chlorodifluoromethane as refrigerant.

16. Use of a refrigeration composition which comprises:

30. (i) pentafluoroethane, 1,1,1,2- or 1,1,2,2-tetrafluoroethane, 1,1-difluoroethane, 1,1,1,2,3,3,3-heptafluoropropane or 1,1,1,2,2,3,3-heptafluoropropane, or a mixture of two or more thereof, in an amount from 30 to 94% by weight based on the weight of the composition and

35. (ii) an unsubstituted hydrocarbon of the formula C_nH_m in which n is at least 4 and m is at least 2n-2, other than methyl propane, in an amount from 1 to 10% by weight based on the weight of the composition, as a replacement for chlorodifluoromethane.

(iii) pentafluoroethane in an amount from 5 to 60% by weight based on the weight of the composition, as a replacement for chlorodifluoromethane.

40. 17. Use according to claim 16 wherein the composition is as defined in claim 13.

9. 18. The process for producing refrigeration which comprises evaporating a composition as claimed in any one of claims 1 to 15 in the vicinity of a body to be cooled.

10. 19. A refrigeration apparatus containing, as refrigerant, a composition as claimed in any one of claims 1 to 15.

45. 11. 20. A refrigeration apparatus according to claim 19 which is designed to use chlorodifluoromethane as refrigerant.

SECOND AUXILIARY REQUEST

Claims

5 1. A refrigerant composition which comprises:

(i) 1,1,1,2-tetrafluoroethane, in an amount from 30 to 50% by weight based on the weight of the composition,

(ii) n-butane in an amount from 1 to 4% by weight based on the weight of the composition,

10 with the remainder, not exceeding 60% by weight based on the weight of the composition, being:

(iii) pentafluoroethane.

2. A composition according to claim 1 wherein component (i) is present in an amount of 15 50% by weight based on the weight of the composition.

3. A refrigerant composition which comprises:

(i) 1,1,1,2- tetrafluoroethane, in an amount from 50 to 75% by weight based on the weight of the composition,

20 (ii) n-butane, in an amount from 1 to 4% by weight based on the weight of the composition,

with the remainder being:

(iii) pentafluorethane.

25 4. A composition according to any one of the preceding claims wherein component (ii) is present in an amount from 2 to 4% by weight based on the weight of the composition.

5. A composition according to claim 4 wherein component (ii) is present in an amount from 3 to 4% by weight based on the weight of the composition.

6. A composition according to any one of the preceding claims which comprises:

- (a) 46 to 46.5% by weight of pentafluoroethane,
- (b) 50% by weight of 1,1,1,2-tetrafluoroethane and
- (c) 4 to 3.5% by weight, respectively, of n-butane.

5 (c) 4 to 3.5% by weight, respectively, of n-butane

7. Use as a refrigerant of a composition as claimed in any one of claims 1 to 6.

8. Use according to claim 7 in a refrigeration or airconditioning system designed to use
10 chlorodifluoromethane as refrigerant.

9. The process for producing refrigeration which comprises evaporating a composition as claimed in any one of claims 1 to 6 in the vicinity of a body to be cooled.

15 10. A refrigeration apparatus containing, as refrigerant, a composition as claimed in any one
of claims 1 to 6.

11. A refrigeration apparatus according to claim 10 which is designed to use chlorodifluoromethane as refrigerant.